

## MATERIALS DEVELOPMENT FOR SPEAKING SKILLS IN AVIATION ENGLISH FOR MALAYSIAN AIR TRAFFIC CONTROLLERS: THEORY AND PRACTICE

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**Abstract.** *In 2004 the International Civil Aviation Organisation (ICAO) mandated that pilots and air traffic controllers the world over meet a set standard of language proficiency requirements as a safety measure against language- and communication-related problems in flying. In response to this mandate, aviation English training and testing initiatives mushroomed in industry. One of the challenges faced by aviation English practitioners was the lack of aviation-specific language learning materials to teach aspects of language. This paper presents in-house training materials that were developed through cooperation and collaboration with subject matter experts in aviation specifically to help a group of trainee air traffic controllers in Malaysia improve their spoken English particularly in fluency as a skill in speaking. The paper offers the theory and practice with regard to the decisions made about the rationale for and the sequencing of materials that underlie the process of materials development. The paper has relevance for ESP and ELT theory and practice with respect to materials development.*

**Key words:** *aviation English, materials development, speaking skills, speaking activities, fluency, air traffic controllers*

### 1. INTRODUCTION

English language is the most widely used language in international aviation communication. The term aviation English encompasses radio telephony phraseology in air traffic control as well as plain English use that is specific to the language of airport personnel especially pilots and air traffic controllers. The term is not new to the area of English for Specific Purposes (ESP). In 1962, the International Civil Aviation Organisation (ICAO, which is a specialised agency of the United Nations that sets standards for aviation safety and security and promotes cooperation in international civil aviation) ruled that air traffic control must provide services in English and since then aviation English appeared as a term in ESP. Many ESP course books and training materials on aviation English emerged throughout 1970s and 1980s such as Ground Services (Hall 1976), In-flight Services (Akiyama 1976), Aviation in English (Williams 1978) and Airspeak (Robertson 1987). In 2004, when ICAO mandated pilots on international flights and controllers operating in airspace that received international flights a compulsory pass in aviation English at an operational level 4 on an aviation English test, there was a renewed interest in aviation English that resulted in a new series of aviation English books such as Cleared for takeoff: English for pilots (Mariner 2007),

English for Aviation (Ellis and Gerighty 2008), *Airspeak* (Robertson 2008) and *Aviation English* (Emery and Roberts 2008).

In 2007, the Department of Civil Aviation (DCA) Malaysia implemented the compulsory ICAO requirement for English for all its air traffic controllers as a measure to meet the specified condition by ICAO. The department through its academy began efforts to improve and upgrade the English language proficiency of its controllers through English language training courses and workshops. English language teachers with an ESP background were invited to conduct these courses and workshops. Although several books on aviation English were available in the international market, the books could not be used completely without introducing in-house teaching materials to address the local needs of the learners.

The present paper discusses the process that I went through in designing the teaching materials for English classes that I conducted for air traffic controllers at the Malaysian Aviation Academy (MAVA) in 2010. The theoretical framework employed, the rationale for the materials used, the sequencing of the materials in class, and the sample materials are presented.

## 2. BACKGROUND

MAVA provides aviation related training to meet national and international needs for its operational and management personnel. The academy conducts a variety of programs for air traffic control as well as aviation management. All aviation programs are conducted in English and aviation English language courses are incorporated into the programs and are taught on an ongoing basis. The aviation English proficiency class discussed in this paper was conducted for 15 trainee air traffic controllers in the Primary Air Traffic Control (ATC) program which is a one-year certificate program that prepares learners to direct traffic. They learn to read flight plans, instruments and weather conditions. They learn to use radar and radio communication to talk to pilots and get hands-on experience at flight control centers during training. For both domestic and international flights they had to be able to communicate orally in English with pilots who may be native or non-native speakers of English. The learners were diploma holders from local institutions in Malaysia and were in their second semester of study at the academy. They were about 21-23 years of age and had taken basic topics in ATC such as flight radiotelephony, human factors, meteorology, air navigation, airway system and aircraft performance. They had learnt English as a second language in Malaysian high schools where English is taught as a single subject and used to teach two school subjects, Math and Science. In the Malaysian context learners also have much exposure to English through the media especially radio, television, and the Internet.

## 3. THEORETICAL FRAMEWORK

Tomlinson and Masuhara (2010) note the importance of principled criteria to guide material writing. There are various principled approaches to writing language learning materials (see for example Jolly and Bolitho (1998), Tomlinson (2003), Tomlinson and Masuhara (2004)). I used Troncoso's (2010) model for materials development and employed his modified version of Hutchinson and Waters' (1998) list of questions for

instructional purposes to help me with materials development. This section elaborates how Troncoso's framework supported the materials that were written for the English class.

Troncoso notes that in materials development we need to consider the social, cultural and educational variables of the materials to be designed. The social and cultural refer to the who, where, what for, and why of the sociocultural context where the material is used. The educational variables comprise the language perspective and methodology adopted for materials development. The language perspective addresses the views of language used (structural/functional/interactional) while the methodology relates to the perspectives of language learning assumed (behavioural/cognitive/dialogic).

Troncoso used Hutchinson and Waters' (1998) list of questions to expand his model for materials development. The questions for each component (sociocultural context, language perspective, and methodology) are listed below:

1. Who, where, what for and why (Sociocultural context)
  - Who are the learners/who is the material intended for?
  - What is the material used for?
  - Where is the material used?
  - When is the material used?
  - Why is the material used?
2. What (Language perspective/Views of language)
  - What kind of language description is presented in the material? (form, function, meaning)
  - What language points should be covered?
  - What social aspects should be covered? What types of social interactions are considered in the material?
  - What text-types should be included?
  - What theory/theories of learning should the material be based on?
  - What kinds of exercises/tasks are needed?
  - What teaching-learning techniques/strategies are to be used?
  - What subject matter area(s) is/are required?
  - What skills are promoted?
3. How (Methodology/Perspectives of language learning)
  - How does the material aid language acquisition?
  - How should the content be organised within the material?
  - How should the content be sequenced within the material?
  - How does the material help learners develop their communicative skills?
  - How flexible does the material need to be?

In this section, I elaborate on the processes I went through and the decisions made as I considered the three components for materials development in Troncoso's model (i.e. the sociocultural context, language perspective/views of language, methodology/perspectives of language learning).

### **3.1. The sociocultural context**

In order to decide on the language contents for the classes, I had to consider the sociocultural context of the group of learners that I had to teach (particularly who the learners are, what the material is used for, when, and why the material is used). Interviews were conducted with MAVA training managers who were subject matter instructors and practising air traffic controllers to gauge the profile of the learners and their needs which I then used as a starting point in my preparation of the classes. The learners as noted in the Background above were trainee controllers who had basics in air traffic control and are ESL speakers at the intermediate level of proficiency. They needed to take an aviation English test (a compulsory requirement by the aviation industry) for which they needed a minimum of Level 4 to pass in order to practise as controllers for domestic and international flights communicating with pilots who may be native or non-native speakers of English. The classes I was asked to conduct were therefore part of the efforts by the organisation to provide in-study English courses to improve the proficiency of the learners and to gear them for an English test that they had to take. The English classes were to be conducted intensively over two days at 7 hours per day at the academy in Sepang, Selangor and the specified focus was on the development of spoken English. In the aviation English test the learners would be assessed using the ICAO rating scale for English language proficiency which is the rating scale endorsed by ICAO for the testing of air traffic controllers and pilots worldwide. The rating scale was therefore used as a starting point to decide on the language points of the classes.

### **3.2. Language perspective/views of language**

In deciding the views of language adopted for materials development (i.e. the what of materials development particularly what language points should be covered, what subject-matter is required, what skills are promoted), I reviewed the literature on the teaching of speaking and studied the ICAO rating scale.

The rating scale assesses listening and speaking through six components – pronunciation, structure, vocabulary, fluency, comprehension, and interactions across six levels (Level 1 Poor to Level 6 Advanced) at which Level 4 (Operational) was the pass mark (ICAO 2004). At Level 4, test takers had to demonstrate comprehensible pronunciation, intelligible fluency and delivery, and a vocabulary range sufficient to communicate on “common, concrete, and work-related topics” with the ability to paraphrase in unexpected circumstances. Interaction skills were also specified where responses of test takers had to be immediate, appropriate and informative” and they had to be able to “initiate and maintain exchanges” during communication (even during emergency or abnormal events) and had to show that they could “deal with misunderstandings by checking, confirming and clarifying” (ICAO 2004).

After discussions with subject matter instructors at MAVA, fluency was decided on as a language point for focus in the English classes. Based on my experience of teaching Malaysian learners of English at various proficiency levels, intermediate learners would have a core grammar and vocabulary and sufficient mastery of pronunciation to be able to communicate in English but they would have problems in establishing and maintaining fluency as they speak. This was also the feedback received from the subject teachers about the particular group of learners.

The review of literature on the teaching of speaking revealed that the learner-speaker faces certain difficulties when speaking in a second language: knowledge factors (the learner does not yet know aspects of the language that enable production) and skills factors (the learner's knowledge is not sufficiently automated to ensure fluency) (Thornbury 2008). Thornbury explains that learners can compensate for their insufficient knowledge of the language system by using communication strategies and for their lack of skills they could use discourse strategies.

Communication strategies are strategies used by speakers to compensate for the lack of vocabulary during communication and some of the commonly encountered strategies in speech are circumlocution (describing the problematic word), approximation (paraphrasing or using alternative related word(s)), word coinage, using an all-purpose word (such as *stuff*, *thing*), language switch, appealing for help, and paralinguistics. In the context of air traffic control since the communication is primarily through radio I decided on circumlocution and approximation to help learners deal with their vocabulary problems when speaking as this would inadvertently help them with the fluency problem. In the ICAO rating scale paraphrasing is seen as a criterion to deal with problems in vocabulary; it is specified that test takers at level 4 "can often paraphrase successfully when lacking vocabulary in unusual or unexpected circumstances". Circumlocution and approximation would thus be suitable strategies to teach for fluency development.

Based on the ICAO descriptors for Fluency, the use of discourse markers are noted as a criterion of fluent speech. It is noted that test candidates at level 4 "can make limited use of discourse markers or connectors". Thornbury notes that the use of discourse markers is important for the fluid management of interactive talk. He explains that fluency involves knowing how to use and interpret discourse markers as turn-management moves. Some of the common discourse markers in speech are *right*, *now*, *anyway*, *well*, *you know*, *I mean* and conjunctions such as *and*, *but*, *or*, *so*, *because*, *then*, and *so forth*. I therefore included discourse markers as a language item for the classes. Malaysian ESL learners would have prior knowledge of these as a result of this aspect being a part of the English language syllabus in Malaysian schools. However, they may not have sufficiently automated the skill of using the discourse markers in speech.

Other than markers, the ICAO descriptors for Fluency note pauses or fillers as an indicator of fluent speech, i.e. pauses or fillers in speech should not be distracting at the Operational level. Thus, learners could be made aware of pausing behavior as a discourse strategy for establishing fluent speech. Thornbury discusses fluency as part of speech production and says that pauses are a feature of fluent speech. He explains that in fluent speech pauses may be long but should not be frequent, pauses should be filled, there are long runs of syllabus and words between pauses, and that pauses occur at meaningful transition points. I therefore included pausing behaviour as part of the syllabus content of the English class.

### **3.3. Methodology/perspectives to language learning**

The literature on the teaching of speaking helped me to make decisions about the methodology or perspectives of language learning (i.e. the how of materials development) especially how the material aids language learning and the development of learners' communicative skills, how the content should be organised and sequenced within the material, and how flexible the material needs to be. When considering the how aspects of

materials development, some of the what aspects were also decided on, particularly what theories of learning the materials should be based on, what text types should be included, what kinds of exercises/tasks are needed, what teaching/learning strategies are to be used, and what social aspects should be covered.

Nation and Newton's (2009) understanding of the four strands to language learning and Thornbury's (2008) template for teaching speaking were used to address the issues in methodology. Nation and Newton's four strands served as an underlying principle to ensure that I had a well-balanced course. According to them such a language course should have: a) meaning-focused input; that is, input to facilitate learning through the receptive medium - listening and reading - where the learner's attention is on gaining knowledge from what they listen and read, b) meaning-focused output; that is, output to enable learning through the productive channel - speaking and writing - where the learner's focus is on conveying ideas and messages to another person, c) language-focused learning which involves learning through deliberate attention to language items and language features such as vocabulary, grammar, sound, spelling, discourse features, language use strategies etc, and, d) fluency development which involves developing fluent use of known language items and features.

Thornbury's (2008) template to teaching speaking skills was used for the preparation of the materials and their ordering in class. The task based approach underlies Thornbury's method for teaching and learning speaking. This approach foregrounds the performance of a task and only after that focuses attention on the linguistic components of the task. Thornbury argues that in learning speaking skills, learners may benefit from first performing a task, then observing a more skillful person performing the same task (which gives learners a chance to notice certain features of speech), and then re-performing the original task. The cycle perform - observe - re-perform which is the basis of the task based approach to language learning is motivated by the belief that "language is best learnt through using it rather than learned and then used" (Thornbury 2008: 119). The learner performs successive trials and re-trials with ongoing assistance from the 'better other' (teacher or peer) during which features of the new skill are noticed and integrated (or appropriated) into the learners' existing competence. A task-based syllabus for speaking is thus based around a sequence of integrated tasks that would involve mainly speaking but not exclusively as other skills such as listening, reading, and writing would also have a role.

Teaching and learning speaking therefore involves three stages from Thornbury's point of view. Learners need to:

- to be made aware of features of the target knowledge-base, i.e. Awareness,
- to integrate these features into their existing knowledge-base, i.e. Appropriation,
- to develop the capacity to mobilize these features under real-time conditions and unassisted, i.e. Autonomy.

These 3 elements of learning speaking are supported by the behaviourist, cognitivist, and sociocultural theories of language learning. In the behaviourist theory, language learning is essentially the formation of good language habits through repeated reinforcement. The three stages of learning are presentation, practice, and production aimed at developing automatic habits through classroom processes of modelling, repetition, and controlled practice.

The cognitivist theory, on the other hand, sees learning as a movement from controlled to automatic processing with conscious attention or awareness raising being applied to

the learning of the rules which are then integrated into the learners existing knowledge through some restructuring of the learner's linguistic system, and are then readily available for use with minimal attentional control on the part of the learner, a stage known as autonomy.

While the behaviourist theory prioritizes habit formation and the cognitivist theory mental functions, the sociocultural theory prioritizes social functions. Learning is situated in its social context through social and cultural activity. To achieve autonomy in a skill, the learner has to first experience other-regulation, that is, the mediation of a 'better other' such as teacher or peer. This takes the form of assisted performance where the teacher or peer interacts with the learner to provide a supportive framework within which the learner can extend his/her present competence. Through this shared activity, new knowledge is jointly constructed until the learner is able to appropriate it, that is make it their own, at which time the support provided by the teacher gradually stops and the learner is able to finally function independently in a state of self-regulation.

All three theories have elements in common although each reflects a different conception of the mind. Thornbury uses the metaphor of a brain to describe the behaviourist mind as being pushed, pulled, and moulded by forces beyond its control while the cognitivist mind is a computerised black box that processes input into output and the sociocultural mind is a network or a joint construct of the discourse community. He notes that each has different implications in terms of language learning but each theory nevertheless incorporates a stage which equates with awareness (where the learner encounters a new rule), attempts to explain how this knowledge is integrated or appropriated into the learner's existing system, and finally how new knowledge becomes available for use, that is automated.

The three stages and the teaching/learning activities in each stage are elaborated below.

### *3.3.1. Awareness raising*

Thornbury describes awareness-raising as involving three processes: attention, noticing, and understanding. Attention requires learners to pay attention, that is, to be alert, interested, involved and curious if they are to notice features of the target skill. Noticing is the conscious registering of the occurrence of an event or entity for instance a new word or skill. Thornbury notes that it is possible for learners to notice the absence of something. For instance, they may notice the difference between their own, novice performance and the performance of an expert, which is referred to as 'noticing the gap'. Understanding involves recognition or perception of a general rule, principle or pattern. All these processes are other-regulated, that is, supported by a teacher or other learners. Thornbury proposes several activities to promote awareness-raising conditions. These are:

- A. using recordings and transcripts,
- B. using live listening,
- C. using noticing-the-gap activities.

### *3.3.2. Appropriation*

Appropriation involves "taking over the ownership of something, of 'making something one's own'" (Thornbury 2008: 63). It involves "demonstrating progressive control of a skill where the possibility of making mistakes is ever-present, but where support is

always at hand”. In appropriation, therefore, control or self-regulation is the objective of the practice. The activities suggested by Thornbury are:

- A. drilling and chants,
- B. writing tasks,
- C. reading aloud,
- D. assisted performance and scaffolding,
- E. dialogues,
- F. communicative tasks (such as jigsaw activity, info-gap race, guessing games, etc.),
- G. task repetition.

### 3.3.3. *Autonomy*

Autonomy is “the capacity to self-regulate performance as a consequence of gaining control over skills that were formerly other-regulated” (Thornbury 2008: 90). The learner is able to perform with minimal assistance in real operating conditions, i.e. conditions that involve urgency, unpredictability, and spontaneity that characterize real-life events. Thornbury (2008) notes that in designing classroom speaking tasks that allow for autonomous language use the activities need to meet the criteria of productivity (the activity needs to be maximally language productive), purposefulness (the activity requires a clear outcome, especially requiring learners to work together to achieve a common purpose), interactivity (activities should require learners to take into account the effect they have on the audience), challenge (the task should stretch the learners so that they are forced to draw on their available communicative resources to achieve the outcome), safety (learners need to feel confident that when attempting autonomous language use, they can do so without too much risk) and authenticity (speaking tasks should have some relation to real-life language use). Some activities proposed by Thornbury(2008) are:

- A. presentations and talks,
- B. stories, jokes and anecdotes,
- C. drama, role-play and simulation,
- D. discussions and debates,
- E. conversation and chat.

The task-based approach was married with the genre-based approach to support the materials development for the class. I adopted the genre-based approach because in ESP teaching the language, tasks, activities, and contexts used for teaching have to mirror as accurately as possible critical features of the target language situation (Moder 2013; Douglas 2000; Dudley Evans and St John 2010; Hutchinson and Waters 1998). The materials used for ESP teaching should be authentic, that is, relating to real communication. Thornbury (2008) explains that the marriage can be established by including an explicit focus on the features of spoken English in the particular genre through a task-based approach. The communication and discourse strategies for fluency as they occurred in air traffic control were thus given explicit focus using the task based methodology. And in keeping to the genre approach, the tasks and activities that I used in the classes involved aviation-related topics and content matter and models that reflected speech between controllers and pilots. This was achieved through cooperation and collaboration with MAVA subject matter instructors. When teaching English in subject-specific work, Dudley-Evans and St Johns (2010) recommend subject-language integration between language teachers and subject teachers (at three levels – cooperation, collaboration, and



team teaching) as the link can result in materials at the right linguistic level for students as well as valid from the subject point of view. This position is also noted by Hussin (2002) who notes that an ESP teacher must get inside the texts and tasks of the specialist language and its purposes in order to exploit these as learning activities.

#### 4. MATERIALS

The materials with regard to teaching/learning activities and text-types and the rationale for them as well as their sequencing are discussed in this section. The materials are presented in the Appendix.

##### 4.1. Reading comprehension

I began the workshop with reading a text and used a topic that the learners had background knowledge in. I kept to the guidelines noted by Nation and Newton (2009) about using reading as a meaning-focused input – that the reading material is familiar and interesting to learners, and that only a small proportion of the language features are unknown to them. The reading text was to prepare learners in terms of providing them with the knowledge necessary for the language output when they do speaking activities. According to Nation and Newton (2009), the condition for meaning-focused output is that learners talk about things they are familiar with. I selected ‘bird strike’ as a topic for the reading text and using reading materials on the topic from their subject-textbooks (provided by MAVA) and the Internet. I prepared a reading comprehension activity. They were expected to have knowledge about bird strikes as this topic had been discussed in their content area subjects in the Primary ATC program. The reading activity involved pre-reading discussion questions (Task A) to activate background knowledge on the topic, followed by post-discussion questions for comprehension (Task B), vocabulary practice (Task C), and practice on structure (Task D). The vocabulary practice involved matching words in the text with pictures which were taken from Aviation English (Emery and Roberts 2008). The structure practice involved discourse markers which I wanted to introduce to them later in the speaking activities as a discourse device for fluency. This was to set the ground work for the forthcoming speaking activities so that the learners would find the activities motivating, coherent and meaningful.

##### 4.2. Speaking: communication strategies - circumlocution

After learners became aware of the gaps in their language production, I wanted to get them to learn to use the communication strategies that I had exposed them to in order to help them fill that gap. I used the guessing game as an appropriation activity to get them to practise and automate the strategy. This activity (Task G) was adapted from Aviation English (Emery and Roberts 2008). Learners were paired and each in the pair was given a list of words that they had to describe to the other who then had to guess the word described. They could take turns to do the describing and the guessing. The criterion for this activity was that the words in the lists had to be known to the learners for them to be able to describe and the other to guess. I included words into the list that they had been exposed to in the vocabulary activity during Reading earlier on. According to Thornbury guessing games provide ideal conditions for automating knowledge: they are inherently

repetitive; there is a two-way interaction; the game takes place in real time which means there is an element of spontaneity and unpredictability; and the focus is on the outcome, not the language being used to get there.

Task H was another guessing game activity adapted from English for Aviation (Ellis and Gerighty 2008). In pairs, one learner was given pictures of airport vehicles and the other a list of words of the airport vehicles. Using the pictures as a prompt one student had to describe the vehicle in terms of its functions while the other learner had to identify the vehicle described.

#### **4.3. Speaking: communication strategies - approximation**

After completing the activities on circumlocution, I moved into approximation and focused on paraphrasing as a communication strategy. As I did with circumlocution, I explicitly taught paraphrasing using notes that I had prepared. Then I began with awareness-raising of this feature of spoken language for which I used recordings and transcripts as tools. Thornbury explains a good way to raise learners' awareness of features of spoken language is to expose them to instances of speaking in the form of recordings and to have them study transcripts of such instances. The advantage of scripting speech is that teachers can get learners to notice the language feature that they want their learners to notice. The recording and transcript I employed was adapted from English for Aviation (Ellis and Gerighty 2008). In Task I, the learners had to listen to an audio-recording of a radiotelephony dialogue between a pilot and controller accompanied with the transcript for the dialogue. The dialogue contained a communication problem between the pilot and controller for which paraphrasing was used as a communication strategy to resolve the problem. Discussion questions ensued to raise learners awareness of the strategy used to deal with the communication problem.

In the appropriation activity (Task J), a writing task was used. In pairs or threes, the learners had to paraphrase phrases taken from a reading text. The text on Bird Strike that was discussed earlier in the class was used. It may seem strange to have a writing activity in a speaking class but Thornbury (2008: 67) notes that "writing has a useful role to play as an initial stage in the appropriation of newly encountered language for speaking" as it can "act as a way of easing the transition from learning to using". Writing helps to reduce the processing demands on learners as a result of real-time speaking. Since paraphrasing requires learners to use other related words to convey messages as a result of language problems, learners need time and space to "consciously access alternatives to their habitual repertoire" (Thornbury 2008: 67-68) which writing is able to provide.

#### **4.4. Speaking: discourse strategies - pausing behaviour and discourse markers**

After communication strategies, the learners were taught about discourse strategies for fluency. Notes were prepared about pauses and discourse markers in speech. Then awareness raising activities in the form of recordings and transcripts followed by listening and noticing the gap activities were used. In Task K, the recordings and transcripts involved interactions between controllers and interlocutors discussing aviation-related pictures. The controllers were expert speakers of English while the interlocutors' proficiency levels varied between advanced to intermediate levels. The interactions were used to discuss features of fluency in speech. This was followed by a listening and noticing the gap activity (Task L) where the learners had to listen to

themselves and/or their peers in order to be aware of their own features of fluency. Then dialogues with chunks on cards (Task M) were used to provide learners conditions for the appropriation of the newly encountered language features. Learners work in pairs or groups of three to have a dialogue and each has a set of cards with useful expressions and discourse markers on them. The learners are to include as many of these features into the conversation or discussion as naturally as possible as it develops. The activity strikes a balance between security and challenge. Learners take risks at their own paces as learners have the opportunity to choose from familiar expressions to unfamiliar ones from the list. Thornbury (2008: 73) warns that dialogue type activities should not be too easy that it is unlikely to motivate learners “to make the kind of adjustments in the current state of their knowledge that are needed in order to integrate new knowledge” nor should it be too challenging that learners “fall back on their existing competence, avoiding the risk-taking that is necessary if their competence is to be extended”. He notes chunks on cards are a way to provide optimal conditions for the incorporation of new language items.

Following the use of dialogues was task repetition in the form of a poster carousel to give learners a further opportunity to appropriate the language items taught. Thornbury argues that task familiarity is a factor in the development of fluency and suggests that task repetition may provide opportunities for appropriation especially of formulaic language. However he warns that repetition can be de-motivating unless there is an incentive for doing so. The poster carousel is suggested as a technique with an incentive to repeat a speaking task. During this activity (Task N), in groups of three, learners prepare a poster on an aviation theme such as accidents, natural disasters, environment and so forth and present their posters in a carousel activity. Half the class will stand by their posters and present them while the other half will circulate, moving from poster to poster, listening to each presentation and asking questions about each poster, with a view to getting as clear as possible an idea of its content. The roles are then changed where those who have been listening and asking questions will now stand by their own posters and become the presenters and interviewees. Thornbury notes that task repetition of this type allows learners to ‘borrow’ elements that other learners had previously used and introduce it into their own speech. In this way, I felt task repetition may be beneficial for appropriation of formulaic language such as interactive expressions and discourse markers.

#### **4.5. Speaking: interaction**

After introducing the communication strategies and discourse strategies for fluency and providing learners with awareness-raising and sufficient opportunities for appropriating the items, I went on to engage learners with activities that would help them automatize the language items taught, that is become fluent with the items. This involved using interaction activities of which I selected discussion and narration, impromptu talk, and role play and simulation. In Discussion and Narration (Task O), groups of three learners were given pictures of aviation accidents/incidents such as bird strikes and were asked to describe what they see in the pictures and to have a discussion of the accident/incident using questions that I had prepared as prompts. Following this, was a Discussion activity (Task P) where learners were given topics such as Aviation and Bird Strikes and had to engage in a discussion using prepared questions to guide the discussion.

In Impromptu Talk (Task Q), individual learners were assigned an aviation-related topic such as ‘What advice would you give a new controller?’ or ‘What would happen if

pilots and controllers never cooperated?’ and had to give their opinions or comments on the topic for 1-2 minutes. They were not allowed much preparation time.

The role-play and simulation activity (Task R) was taken from Aviation English (Emery and Roberts 2008). In pairs, learners act out the role of pilot and controller who were involved in an abnormal aviation situation by using the speech contents provided in the activity. They are allowed a few minutes to prepare the dialogue. Following this was a more open-ended version of the activity (Task S) where learners were not given speech contents of the situation they were in and had to invent details on their own by drawing on their experiences and knowledge and subsequently acting out the scenarios. As a result of the complexity of the task, the learners were given a few of minutes of preparation time in class.

##### 5. CONCLUDING REMARKS

The contributions of this paper to the literature in ESP and ELT are two-fold. Firstly, the paper presents a case of teaching/learning materials developed for teaching fluency as a skill in speaking in the subject-specific context of aviation for a group of Malaysian ESL trainee air traffic controllers of intermediate proficiency. The case and materials presented here may serve useful for similar groups of controllers or other aviation personnel particularly pilots not only in Malaysia but also in other parts of the world. Dudley Evans and St Johns (2010) note the importance for ESP designers to look at various examples from diverse situations because considerable amount of money, time and energy can be saved by learning from these examples, by looking at the decisions other designers have made, and at the materials they selected, and then adapting these to match the particular parameters in their own situations. This position is supported by Orr (2002) who presents an edited book of case studies in teaching English to various groups of ESP learners from around the world in various academic and professional settings. She explains that the cases present multiple views and provide varied perspectives on the issues and examples of useful approaches that allow teachers to compare and make evaluations against their own circumstances. She says that although ESP course and material design requires a high degree of particularity and specificity to the sociocultural context of learning particularly learners’ needs and the educational setting, effective teaching has general applications with regard to the theory and the practice of the various approaches to course/material/program design and teaching methodologies. The experience reported in this paper therefore has significance and applications in other tertiary and professional settings.

Secondly, Feak (2013:49) observes that although much research has been undertaken to inform teaching ESP speaking, “the materials developed are largely occluded, shared to a much lesser extent than the actual research”. She explains that “efforts to develop and make available evidence-based instructional materials are needed together with accounts of their evolution” (Feak, 2013: 49). The significance of this paper is thus also evident in the detailed description of the theory and practice of the approaches used including an understanding of the rationale for and ordering of the materials. Applications of the theoretical framework may be extended for materials development of other skills in speaking such as pragmatic features in aviation communication like speech acts and politeness and mitigation (see Paramasivam 2010 for a discussion of these features in aviation discourse).

In sum, the paper echoes the views of Dudley Evans and St Johns (2010:169) that ESP course and materials design requires “intelligent juggling” of all the course parameters and on experience of how best to match them with learners’ needs. If systematic attention to actual needs of the learners continues to be the hallmark of ESP, there will be a continued need to provide appropriate, tailor-made instruction in terms of course and material design, program and curriculum development and effective methodologies for teaching. Further sustained research into the many aspects of ESP teaching is thus required. In the case of aviation English, Feak (2013) observes that since the implementation of the ICAO mandate, aviation English course development and valid assessments to measure proficiency of pilots and controllers will continue to be critical areas of ESP speaking inquiry.

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**APPENDIX*****Reading*****BIRD STRIKE**

A bird strike or bird hit is a collision between an airborne animal (usually a bird or bat) and a man-made vehicle, especially aircraft. Bird strikes are a significant threat to flight safety, and have caused a number of accidents with human casualties. Most accidents occur when the bird hits the windscreen or flies into the engines.

Bird strikes happen most often during takeoff or landing, or during low altitude flight. However, bird strikes have been reported at high altitudes, some as high as 6000 m to 9000 m above the ground. The point of impact is usually any forward-facing edge of the vehicle such as a wing leading edge, nose cone, jet engine cowling or engine inlet. Jet engine ingestion is extremely serious due to the rotation speed of the engine fan and engine design. As the bird strikes a fan blade, that blade can be displaced into another blade and so forth, causing a cascading failure. Jet engines are particularly vulnerable during the takeoff phase when the engine is turning at a very high speed and the plane is at a low altitude where birds are more commonly found.

The force of the impact on an aircraft depends on the weight of the animal and the speed difference and direction of the impact. The energy of the impact increases with the speed difference. Therefore a low-speed impact of a small bird on a car windshield causes relatively little damage. High speed impacts, as with jet aircraft, on the other hand, can cause considerable damage and even catastrophic failure to the vehicle.

The animals most frequently involved in bird strikes are large birds with big populations, particularly geese and gulls in the United States. In parts of the US, Canada geese have risen significantly. As a matter of fact, a report by the US Dept of Agriculture and Wildlife Services suggests the population of Canada geese in the US and Canada has increased fourfold from 1970 to 2007 with a jaw-dropping population estimate of 5.8 million geese. It is noted the largest numbers of strikes happen during the spring and fall migrations since this is when birds are on the move.

To reduce bird strikes on takeoff and landing, airports engage in bird management and control. This includes changes to habitat around the airport to reduce its attractiveness to birds. Vegetation which produces seeds and grasses which are favoured by birds should be removed from the airport area. Trees and tall structures which serve as roosts at night for flocking birds should be removed or modified to discourage bird use. Other approaches include using frightening devices as bird scarers such as sounds, lights, lasers, firearms, dogs, and decoy animals or corpses. In fact, at the John F. Kennedy International Airport, falcons are sometimes used as birds of prey to harass the bird population.

**TASK A: Questions for Pre-Discussion**

What do you know about a bird strike?

Can you explain what a bird strike is?

How does a bird strike occur?

Have any of you ever experienced a bird strike?

**TASK B: Questions for Post-Discussion**

Why is a bird strike a threat to aircraft safety?

What are some countermeasures to reduce the effect of bird strikes?

**TASK C****Vocabulary practice**

Match the words below with the pictures A-G.

1. bird scarer
2. bird of prey
3. perimeter fence
4. CCTV camera
5. Poison
6. grass margin
7. security worker

(*Aviation English* by Emery and Roberts 2008 pg 33)

**TASK D****Structure practice**

Look again at the reading passage 'Bird Strike'. The discourse markers listed below are used in the text. What is the function of these markers? Construct a sentence for each marker.

1. However
2. due to
3. Therefore
4. on the other hand



**Speaking**

Communication strategies

Notes

When a speaker wants to express something but encounters problems as a result of his limited vocabulary, he may resort to communication strategies such as paraphrasing and describing to convey his message.

For example if he wants to say ‘turbulence’, but does not have this word in his language repertoire or is unable to retrieve it at the moment of talk, he may explain or describe ‘very strong wind make the aircraft unable to maintain level’ to get the message across to his interlocutor.

In radiotelephony communication the need to use communication strategies arise especially during unusual or abnormal situations when language use is not governed by phraseologies. Communication strategies are used both by native as well as second and foreign language speakers of a language.

TASK E (Awareness-raising – ‘live’ listening and noticing-the-gap activities)

Speak for about 1-2 minutes on the topic given to you.

Topics

1. What is a bird strike? How does it happen?
2. How can we keep planes safe from bird strikes?
3. Tell us of an incident that you know of involving a bird strike on an aircraft.
4. Tell us about one of your best or worst experiences as a pilot/controller.

(When a student speaks, the rest of the class is to listen and take note of whether the student had trouble finding the right words to express himself. Make remarks on the use of communication strategies. Use the questions in Table 1 as a guide. Then discuss your observations with your instructor.)

Table 1

		Remarks
1.	Did the speaker have trouble finding the right words at any point of the activity?	
2.	What happened when this occurred? What did the speaker do?	
3.	Did the speaker use a word that is similar in meaning to the one he/she wanted to say?	
4.	Did the speaker use his hands to convey what he/she wanted to say?	
5.	Did the speaker use a word from his/her own native language?	
6.	Did the speaker describe or explain what he/she wanted to say?	
7.	Did the speaker do something else? What?	

(adapted from *Conversation* by Rob Nalasco & Lois Arthur 1987 pg 135-136)

TASK F (Awareness-raising – ‘live’ listening and noticing-the-gap activities)

Now listen to your instructor (or an invited speaker). Listen and take note of the speaker’s speech using Table 1. Then discuss the differences between you, your colleagues and your instructor (or the guest speaker) using the observations made through Table 1.

Communication Strategy - Describing or explaining unknown words

Here are ways to describe or explain an object. Tell what the object is used for and/or what it looks like.

Example: cargo handler

It’s made of steel.

It’s something for moving large quantities of goods.

It’s used to transport goods.

It is something that helps companies operate worldwide.

TASK G (Appropriation – Guessing game)

Work in pairs. You are going to practice describing and explaining words. Each of you has a list of words. Describe and explain what the things are used for, but don’t say the words. Your partner will try to guess the object being described. You may ask each other questions during the activity.

List for Student A | List for Student B

birdscarer

perimeter fence

bird of prey

grass margin

CCTV camera

nose cone

fireworks

bird strike

decoy animals

windshield

jet engine cowling

fan blade

(adapted from *Aviation English*, Emery and Roberts, 2008. pg 35)

TASK H (Appropriation – Guessing game)

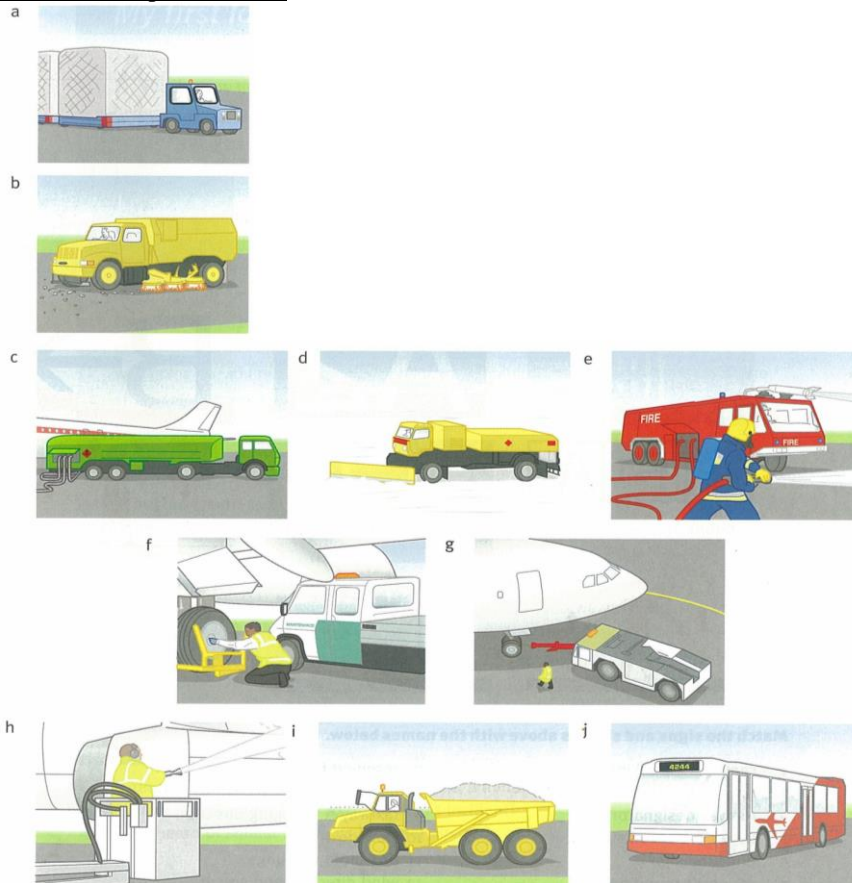
Work in pairs. You are presented with pictures and a list of airport vehicles. Student A describes the vehicle (using the pictures as a prompt) while Student B listens and tries to identify the vehicle described (through the list given). Student A is not to reveal the pictures to Student B. You may ask each other questions during the activity.

Airport vehicles

aircraft de-icer, sweeper, bus, fire engine, fuel tanker, maintenance truck, snowplough, flat-bed truck, push-back tug, heavy plant.

(adapted from *English for Aviation*, Ellis and Gerightly, 2008. pp 22)

Pictures of airport vehicles



Communication Strategy – Paraphrasing

Notes

Paraphrasing is a communication strategy to help speakers convey messages when there are language problems. Paraphrasing involves transforming original text into your own words. This is done in two ways:

- a. replacing words in the original text with synonyms or words with similar meaning, and
- b. making structural changes to the original text, for example by changing the word order.

The examples below illustrate this:

Example:

Original sentence:

The temperature in many parts of the world is gradually rising.

Paraphrase 1:

The temperature in lots of places around the earth is slowly increasing.

Paraphrase 2:

Most parts of the world are getting hotter steadily.

(adapted from *First steps to paraphrasing* by Tim Newfields)

**TASK I** (Awareness-raising – Recordings and Transcripts)

Listen to the exchange between the pilot of Blaze 606 and the tower controller. The transcript of the dialogue is provided below. Answer the questions.

- Pilot Tukubu Tower, Blaze 606. We have a problem and we'd like a priority landing. We have violent passenger on board.
- Tower Say again 606. I don't understand.
- Pilot We have an unruly passenger on board. We have a violent passenger. He has hit a member of the cabin crew. Request priority landing.
- Tower 606, I'm sorry sir. I do not understand your problem, sir.
- Pilot This passenger is endangering the safety of the flight. He is drunk.
- Tower The safety of the flight is in danger?
- Pilot Affirm. We have an aggressive passenger. We need to get on the ground as soon as possible.

Questions:

1. What is the communication problem encountered between the pilot and the controller?
2. What did the pilot do to help the controller understand?
3. What did the controller do to deal with the communication problem?

(adapted from *English for Aviation* by Ellis and Gerighty 2008pg 8)

**TASK J** (Appropriation – Writing Task)

Based on the reading text on Bird Strikes, explain what is meant by the underlined phrases. Paraphrase the underlined phrases.

- a) Bird strikes are a significant threat to flight safety, and have caused a number of accidents with human casualties.
- b) Jet engine ingestion is extremely serious as a result of the rotation speed of the engine fan and engine design.
- c) Jet engines are particularly vulnerable during the takeoff phase when the engine is turning at a very high speed and the plane is at a low altitude where birds are more commonly found.
- d) High speed impacts, as with jet aircraft, can cause considerable damage and even catastrophic failure to the vehicle.
- e) A report by the US Dept of Agriculture and Wildlife Services suggests the population of Canada geese in the US and Canada has increased fourfold from 1970 to 2007 with a jaw-dropping population estimate of 5.8 million geese.

**Speaking**

Discourse Strategies – Pausing Behaviour and Discourse Markers

Notes

Fluency is understood as the ability to speak in a language with ease. It involves the ability to link words and ideas together with facility, without strain or inappropriate slowness and hesitation. The speech of a non-fluent speaker is discernible through frequent pauses, repetitions, and self-corrections. Discourse strategies for improving fluency are control of pausing behavior and the use of discourse markers in speech.

### Pausing behaviour

In order to improve fluency, speakers need to work on their pauses. Attention needs to be paid to:

- a. the placement of pauses,
- b. the frequency with which pauses occur, and
- c. the length of run between pauses.

Pauses should occur at meaningful transition points (i.e. after groups of words that form a meaningful unit). These are natural-sounding pauses, and they do not occur too frequently in speech. The length of run between pauses has to do with the number of words between one pause and another. The longer the runs the more fluent is the speaker. Fluent speakers also use certain strategies that involve the use of certain expressions to give the impression of fluency when they encounter problems while speaking. These expressions give them formulation time to gather their thoughts together. Their pauses, as a result, are filled pauses. The most common filled pauses are:

sort of, I mean, you know, you see, what I mean to say is, what do you call it, and the use of repeats – repetition of words when formulation has temporarily paused.

To summarise, the features of fluent speech are:

- a. pauses are not frequent
- b. pauses are usually filled
- c. pauses occur at meaningful transition points
- d. there are long runs of words between pauses

### Discourse Markers

A feature of fluent speech is the use of discourse markers. A discourse marker is a word or phrase that functions to organize speech into manageable parts. They help the speaker sort out his talk and simultaneously guide the hearer through the speech. The underlined utterances below are some examples of discourse markers in speech.

Example: A dialogue between a controller and an interlocutor

Interlocutor	Controller
What are some of the things that can go wrong in aerodrome environment?	<u>A lot of things</u> can go wrong. <u>Firstly</u> aircraft may have problems to depart <u>as a result</u> of technical problems.
What kind of technical problems?	I mean erm like ah erm engine might not be working ah the (2.0) hydraulics might not be working.
What do you mean by hydraulics?	Hydraulics means ah that means the components to make the aircraft move the what you call it the mechanism by liquid to make the aircraft parts move.
What about aerial environment? What could go wrong there?	<u>Firstly</u> there can be a breakdown in separation. <u>Other than that</u> aircraft may not be able to maintain altitude (.) <u>also</u> birdstrike (.) engine problem is <u>another one</u> (.) depressurization <u>as well</u> .

Some common discourse markers in speech are:

<i>Function</i>	<i>Forms</i>
1. Discourse markers for addition	and too also as well as in addition furthermore moreover
2. Discourse markers for contrast	but however on the other hand
3. Discourse markers for time / sequence	firstly secondly then next after that finally while
4. Discourse markers for probability	maybe probably
5. Discourse markers for cause	due to because
6. Discourse markers for result / consequence	so therefore consequently

**TASK K** (Awareness-raising – Recordings and Transcripts)

Recordings 1 and 2 (and the accompanying Transcripts 1 and 2) are interactions between controllers and interlocutors. They are discussing Picture 1 and 2 below. Listen to the recordings and read the transcripts.

Discuss the differences between the two interactions with regard to the features of fluency.

- a. identify where pauses occur (both filled and unfilled pauses)
- b. count the frequency of pauses (both filled and unfilled pauses)
- c. identify the expressions used in filled pauses
- d. comment on the variety of expressions used to establish fluency
- e. count the number of words that occur between pauses (length of run)
- f. comment on the length of run between pauses in the interactions
- g. identify the discourse markers used
- h. comment on the function of the discourse markers used

Picture 1



Picture 2



Transcript 1

- Controller: It looks to me the aircraft has just landed and it looks like a hard landing (.) and it could be due to (.) hydraulics problem (.) and braking system has failed (.) causing the friction (.) resulting in the fire as I can see it.
- Interlocutor: Ok
- Controller: and er (2.0) looks like a hard landing (.) with all the sparks and all that behind
- Interlocutor: What would you do?
- Controller: The first thing I would do is press the crash alarm then I would tell my supervisor (.) I will also have to tell the approach (.) and eventually coordinate
- Interlocutor: Why would you tell approach?
- Controller: Because definitely there will be (.) what I mean is occupancy will be affected by this aircraft and (.) they need to sequence their (.) aircraft landing if there is any arrival (.) and of course the departure would be affected too.

Transcript 2

- Controller: This is Malaysia Airlines (6.0) the aeroplane ah (3.0) is ah (6.0) is nearly ah fall into the drain a big drain (3.0) the nose wheel ah (6.0) damage (5.0) but ah there is no explosion.
- Interlocutor: When do you think the accident occurred?
- Controller: Just happened
- Interlocutor: Why do you say that?
- Controller: er (3.0) maybe while taxiing while taxiing ah maybe wrong instruction by our controller maybe the pilot also not familiar the particular airport (1.0) so pilot (1.0) or some technical or some equipment er (1.0) not function so the pilot go into the drain.
- Interlocutor: What would you do in this situation?
- Controller: The first thing I will do is press the crash alarm (.) and then inform fire brigade one craft er (4.0) might be accident and nearby gone into the drain (2.0) and ask fire brigade to rush quickly to the airplane and give er whatever.
- (.) indicates pause less than a second  
 (1.0), (2.0) ... indicate length of pause in seconds

**TASK L** (Awareness-raising – Recordings and Noticing-the-gap activities)

Listen to recordings of your own speech, your peers and your instructor/the invited speaker made in Task E and F, and comment on

- a. pausing behavior
- b. use of discourse markers

Note down the fillers and discourse markers you and the other speakers use. Why do you think they use them? How necessary do you think they are?

**TASK M** (Appropriation – Dialogues: Chunks on Cards)

Work in groups of three. Each of you has one of the bingo cards below. Choose a topic from the box or choose one of your own and start a discussion. As you are speaking you must try to use all the expressions on your bingo card. Each time you use one cross it off. When you have used all of the expressions on your card, shout 'Bingo!'. As long as the other group members are happy that you used the expressions correctly, you are the winner.

Topics for discussion

learning English	good food	city life	the 21 <sup>st</sup> century
science and technology	aviation and pollution		aviation and natural disasters

*CARD 1*

as well as  
furthermore  
in addition  
on the other hand  
consequently  
eventually  
while

*CARD 2*

moreover  
as well as  
however  
as a result  
probably  
ultimately  
on the whole

*CARD 3*

after that  
but  
too  
maybe  
as a result of  
therefore  
in sum

**TASK N** (Appropriation – Task repetition: Poster Carousel)

Work in groups of three. Prepare a poster on an aviation theme (such as aviation accidents/incidents, aviation and the environment, aviation and natural disasters, and so forth). You will present this poster in a poster carousel activity. During this activity, half the class will stand by their posters and present them while the other half will circulate, moving from poster to poster, listening to each presentation and asking questions about each poster, with a view of getting as clear as possible an idea of its content. Then change your roles. Those who have been listening and asking questions will now stand by their own posters and become the presenters and interviewees.

**Speaking**

Interaction

**TASK O** (Discussion and Narration)

In pairs or groups of three, discuss the picture of the unusual event given to you. Your discussion should include:



- a. what you see in the picture
- b. what you think may have happened
- c. the possible causes of the event
- d. the possible effects/consequences of the event
- e. what you would do if you were confronted with this situation, how you would react as a pilot/controller
- f. narrations of unusual events that you have experienced or read about.



**TASK P** (Discussion)

In groups of three, discuss the topic given to you.

Topic: Aviation and Bird Strikes

The questions below may be used to engage in a discussion.

- a. What measures can be taken to reduce bird strikes?
- b. Whose responsibility is it to look for solutions to bird strikes?
- c. What is the responsibility of the controller/pilot in curbing bird strikes?
- d. Could radars keep an aircraft from colliding with birds?
- e. Do we need to be concerned about the risk to birds in protecting aircraft from bird strikes?

**TASK Q** (Impromptu Talk)

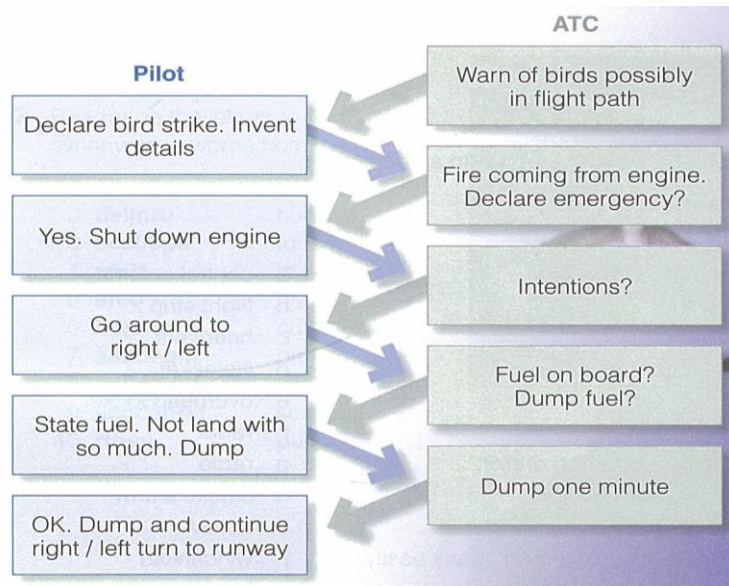
Give your opinions on the topic assigned to you. You should speak on the topic for about 1-2 minutes.

- a. What would happen if pilots and air traffic controllers never cooperated?
- b. What advice would you give a new pilot / air traffic controller?
- c. The pilot is to blame in every aviation incident.

**TASK R** (Role-play and Simulation)

Work in pairs. Student A is the pilot of WindAir 87. Student B is the controller. Spend a few minutes thinking of what you are going to say, then act out the dialogue. Then change roles.

(from *Aviation English*, Emery and Roberts, 2008. pp. 37)



#### TASK S (Role-play and Simulation)

In groups of three, read and understand the abnormal aviation scenario given to you. Invent details and act out the scenario. You need to take on roles of pilot, controller, and a related agency such as supervisor, police, fire brigade, and so on.

- MAS 9851 reports bird ingestion and aborting take-off. Subsequently, the pilot reports jammed brake. The pilot then requests assistance for towing back to gate.
- DLH 783 reports complete electrical failure and loss of navigation capability and requests navigation assistance. Subsequently, the aircraft declares full emergency and smoke in the cockpit.
- The controller receives a phone call from the Director General of Civil Aviation informing him to hold BBC 345 for a police search as the aircraft is suspected to be smuggling drugs.